SAMOYLOVA, Z.T.

Section of pharmacology and Toxicology of the Moscow Society of
Physiologists, Biochemists and Pharmacologists. Farm. i toks. 19
no.6:58-59 N-D '56.   (MIRA 10:2)
        (PHARMACOLOGY)   (POISONS)

RAYSKINA, M.B.; SAMOYLOVA, Z.T.

Effects of I.P.Pavlov's accelerator nerve on coronary circulation.
Biul.eksp.biol.med. 42 no.6:3-7 Je '56.   (MLRA 9:9)

1. Iz kafedry patologicheskoy fiziologii TSentral'nogo instituta
usovershenstvovaniya vrachey (dir. V.P.Lebedeva) i laboratorii
patologicheskoy fiziologii (zav. - prof. V.V.Parin) Instituta
terapii AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN
SSSR A.L.Myasnikovym.

    (HEART, innervation
        Pavlov's accelerator nerve, eff. of stimulation on
        coronary circ. in dogs, ECG)
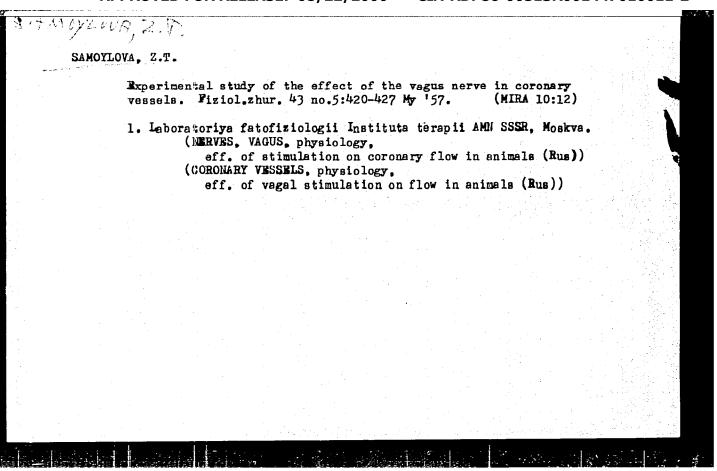   (ELECTROCARDIOGRAPHY,
        eff. of stimulation of Pavlov's accelerator nerve on
        coronary circ. in dogs)

SAMOYLOVA, Z.T.

Effect of narcotics on renal circulation in healthy dogs and in dogs
with experimental hypertension. Biul.eksp.biol.med. 42 no.6:45-48
Je '56.   (MLRA 9:9)

1. Iz laboratorii patologicheskoy fiziologii (zav. - prof. V.V.Parin)
Instituta terapii (dir. - deyatvitel'nyy chlen AMN SSSR A.L.Myasnikov)
AMN SSSR, Moskva. Predstavlena deystvitel'nym chlenom AMN SSSR
A.L.Myasnikovym.
        (KIDNEYS, blood supply
            in hypertensive & normal dogs, eff. of anesthetics)
        (HYPERTENSION, exper.
            eff. of anesthetics on renal blood supply in dogs)
        (ANESTHETICS, eff.
            on renal blood supply in hypertensive & normal dogs)

SAMOYLOVA, Z.T.

Experimental study of the effect of the vagus nerve in coronary
vessels. Fiziol.zhur. 43 no.5:420-427 My '57.   (MIRA 10:12)

1. Laboratoriya fatofiziologii Instituta terapii AMN SSSR, Moskva.
     (NERVES, VAGUS, physiology,
        eff. of stimulation on coronary flow in animals (Rus))
     (CORONARY VESSELS, physiology,
        eff. of vagal stimulation on flow in animals (Rus))

MENTOVA, V.N.; SAMOYLOVA, Z.T.; SMAZHNOVA, N.A.

Hypotensive and adrenolytic action of sympatholytin. Trudy
Vses. ob-va fiziol., biokhim. i farm. 4:149-156 '58.

(MIRA 14:2)

1. Institut terapii AMN SSSR. Direktor instituta prof. A.L.
Myasnikov.

(SYMPATHOLYTICS)

SAMOYLOVA, Z.T.

Change in the reflex reaction of the vessels of the extremities to adrenaline and acetylcholine in experimental hypertension in dogs.
Gip.bol. no.5:112-122 '58.   (MIRA 13:5)
    (EXTREMITIES (ANATOMY)) (REFLEXES) (HYPERTENSION)
             (ADRENALINE)   (CHOLINE)

SAMOYLOVA, Z.T.

Pharmacology and toxicology section of the Moscow Society of
Physiologists, Biochemists and Pharmacologists. Farm. i toks.
21 no.2:95 Mr-Ap '58   (MIRA 11:6)
          (PHARMACOLOGY)

SAMOYLOVA, Z.T.

Effect of aprophene and diprophene on coronary circulation in experimental myocardial infarct [with summary in English].
Farm. i toks. 21 no.4:16-23 Jl-Ag '58   (MIRA 11:11)

1. Laboratoriya patofiziologii Instituta terapii AMN SSSR.
   (MUSCLE RELAXANTS, effects
      aprophene & diprophene, on coronary circ. in exper.
      myocardial infarct (Rus))
   (CORONARY VESSELS, effect of drugs on,
      aprophene & diprophene in exper. myocardial infarct
      (Rus))
   (MYOCARDIAL INFARCT, experimental,
      eff. of aprophene & diprophene on cerenary circ.(Rus))

SAMOYLOVA, Z.T.; TANK, L.I.; ZAKS, A.S.

Report on congresses, conferences and society meetings. Farm. i toks 21 no.6:84-91 N-D '58.   (MIRA 12:1)
          (PHARMACOLOGY)

SAMOYLOVA, Z.T. (Moskva)

Result of prolonged cholesterol feeding of cats under various experimental conditions. Pat. fiziol. i eksp. terap. 3 no.3:47-52 My-Je '59.   (MIRA 12:7)

1. Iz patofiziologicheskoy laboratorii Instituta terapii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR prof. A.L. Myasnikov).
        (ARTERIOSCLEROSIS, experimental,
            cholesterol-induced in cats exposed to various exper.
            conditions (Rus))
        (CHOLESTEROL, eff.
            exper. arteriosclerosis in cats exposed to various exper.
            conditions (Rus))

SAMOYLOVA, Z.T.; RAYSKINA, M.Ye. (Moskva)

Hemobarostat an apparatus for maintaining arterial pressure at a
constant level. Pat.fiziol. i eksp.terap. 3 no.6:65-68 N-D '59.
                                                    (MIRA 13:3)

1. Iz laboratorii patologicheskoy fiziologii Instituta terapii AMN
SSSR (direktor - deystvitel'nyy chlen AMN SSSR prof. A.L. Myasnikov)
i kafedry patofiziologii (zaveduyushchiy - chlen-korrespondent AMN SSSR
prof. P.D. Gorizontov) TSentral'nogo instituta usovershenstvovaniya
vrachey.
              (CARDIOLOGY equip. & supplies)
              (BLOOD PRESSURE)

SAMOYLOVA, Z.T.

Experimental data on the effect of pentamine on coronary circulation
in acute disorders of cardiac blood supply [with summary in English].
Farm. i toks. 22 no.1:52-58 Ja-F '59.   (MIRA 12:4)

1. Laboratoriya patofiziologii Instituta terapii AMN SSSR (dir. -
deystvitel'nyy chlen AMN SSSR A.L. Myasnikov).
            (PENDIOMIDE, effects,
                on coronary circ. (Rus))
            (CORONARY VESSELS, eff. of drugs on,
                pendiomide (Rus))

MENTOVA, V.N.; SAMOYLOVA, Z.T.

Effect of dioquine on the arterial pressure of dogs with experimental
hypertension. Khim. i med. no.15:125-130 '60.   (MIRA 15:1)

1. Iz patofiziologicheskoy laboratorii Instituta terapii AMN SSSR.
(dir. - deystvitel'nyy chlen AMN SSSR prof. A.L.Myasnikov).
            (BLOOD PRESSURE)   (HYPERTENSION)
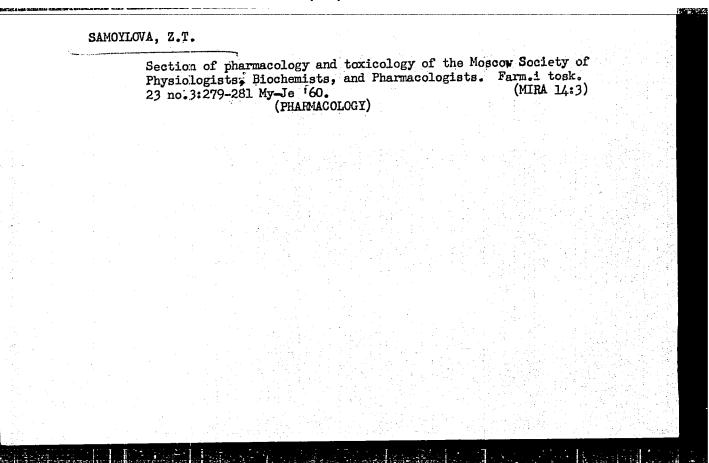   (DIOQUINE—PHYSIOLOGICAL EFFECT)
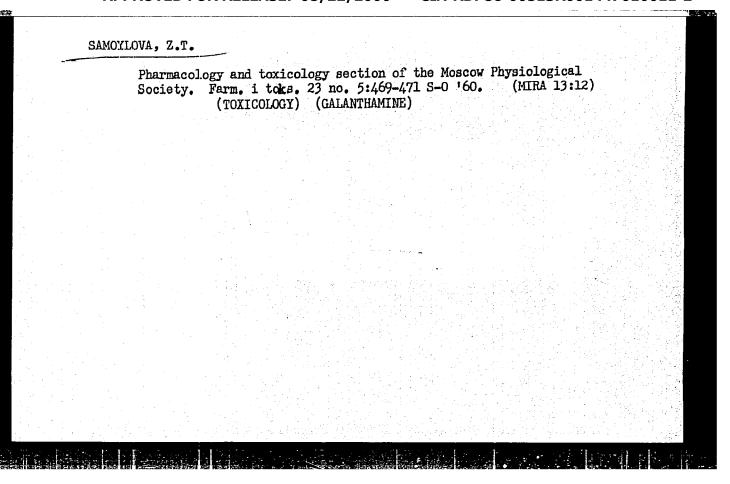
MENTOVA, V.N.; SAMOYLOVA, Z.T. (Moskva)

Dynamics of the development of cardiovascular disorders with changes in blood lipids during the production of experimental atherosclerosis in dogs. Pat.fiziol.i eksp.terap. 4 no.4:32-38 Jl-Ag '60.
(MIRA 14:5)

1. Iz Instituta terapii (dir. - deystvitel'nyy chlen AMN SSSR prof. A.L.Myasnikov) AMN SSSR.
(ARTERIOSCLEROSIS)   (LIPIDS)

SAMOYLOVA, Z.T.

Section of pharmacology and toxicology of the Moscow Society of
Physiologists, Biochemists and Pharmacologists. Farm.i toks. 23
no.1:92-95 Ja-F '60.   (MIRA 14:3)
                              (PHARMACOLOGY)

SAMOYLOVA, Z.T.

Section of pharmacology and toxicology of the Moscow Society of
Physiologists, Biochemists, and Pharmacologists. Farm.i toks.
23 no.2:186-k87 Mr-Ap '60.   (MIRA 14:3)
                          (PHARMACOLOGY)

SAMOYLOVA, Z.T.

Section of pharmacology and toxicology of the Moscow Society of
Physiologists, Biochemists, and Pharmacologists. Farm.i tosk.
23 no.3:279-281 My-Je '60.　　　　　　　　　　(MIRA 14:3)
(PHARMACOLOGY)

SAMOYLOVA, Z.T.

Pharmacology and toxicology section of the Moscow Physiological
Society. Farm. i toks. 23 no. 5:469-471 S-O '60.   (MIRA 13:12)
(TOXICOLOGY) (GALANTHAMINE)

SAMOYLOVA, Z.T.

Effect of chloracizine on the cardiovascular system. Farm.i toks.
23 no.6:503-508 N-D '60.   (MIRA 14:3)

1. Institut terapii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR
A.L.Myasnikov).
                    (PHENOTHIAZINE)   (PARASYMPATHOLYTICS)
                         (CARDIOVASCULAR SYSTEM)

SAMOYLOVA, Z.T.; TANK, L.I.

Brief news.   Farm.i toks. 23 no.6:562-563 N-D '60.   (MIRA 14:3)

1. Sekretar' sektsii farmakologii i toksikologii Leningradskogo
obshchestva fiziologov, biokhimikov i farmakologov imeni I.M.
Sechenova (for Tank).
                        (PHARMACOLOGY)

RAYSKINA, M.Ye.; SAMOYLOVA, Z.T.(Moskva)

Nervous influences on the blood coagulation rate in experimental
arteriosclerosis. Pat.fiziol.i eksp.terap. 5 no.1:40-46 Ja-F '61.
(MIRA 14:6)

1. Iz kafedry patologicheskoy fiziologii (zav. - chlen-korrespondent
AMN SSSR prof. P.D.Gorizontov) TSentral'nogo instituta usovershen-
stvovaniya vrachey.
(ARTERIOSCLEROSIS)   (BLOOD—COAGULATION)
(NERVOUS SYSTEM, SYMPATHETIC)

SAMOYLOVA, Z.T. (Moskva)

Effect of vitamin K (vikasol) on the development of arteriosclerosis
in rabbits. Pat.fiziol. i eksp. terap. 5 no.3:33-38 My-Je '61.
(MIRA 14:6)
1. Iz laboratorii patofiziologii Instituta terapii (dir. -
deystvitel'nyy chlen AMN SSSR prof. A.L.Myasnikov) AMN SSSR.
(ARTERIOSCLEROSIS)   (VITAMINS—K)

SAMOYLOVA, Z.T.; RYAZHENOV, V.V.

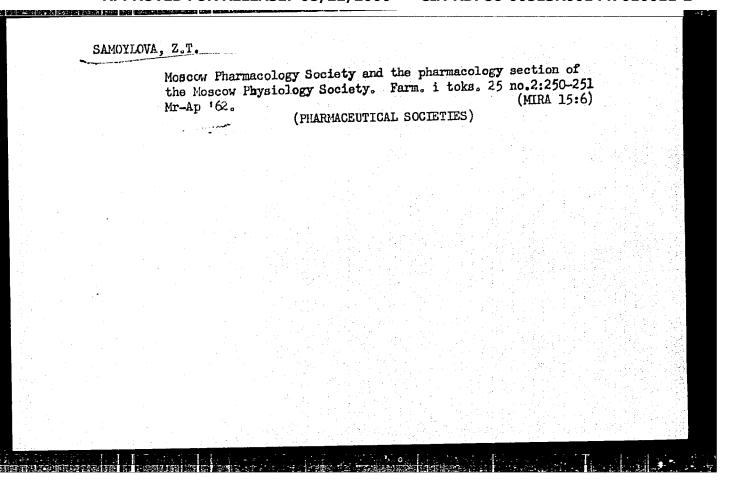Effect of heparin on the coronary circulation. Farm.i toks. 24 no.1:66-70 Ja-F '61.
(MIRA 14:5)

1. Institut terapii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR prof. A.L.Myasnikov) i kafedra farmakologii farmatsevticheskogo fakul'teta (zav. - prof. M.M.Nikolayeva) I Moskovskogo ordena Lenina meditsinskogo instituta.
(CORONARY VESSELS)   (HEPARIN)

SAMOYLOVA, Z.T.

Moscow Pharmacological Society and the pharmacology section of the
Moscow Physiological Society. Farm.i toks. 24 no.2:251-252 Mr-
Ap '61.   (MIRA 14:6)
          (MOSCOW—PHARMACOLOGICAL SOCIETIES)

SAMOYLOVA, Z.T.

Moscow Pharmacological Society and the section on pharmacology of
the Moscow Physiological Society. Farm. i toks. 24 no.5:637-638
S-O '61.   (MIRA 14:10)

(MOSCOW--PHARMACEUTICAL SOCIETIES)

SAMOYLOVA, Z.T.

Effect of sodium nitrite, nitroglycerin and papaverine on renal
circulation in experimental atherosclerosis. Farm. i toks. 25 no.1:
38-43 Ja-F '62.   (MIRA 15:4)

1. Institut terapii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR
A.L.Myasnikov).
              (ARTERIOSCLEROSIS)   (KIDNEYS--BLOOD SUPPLY)
   (SODIUM NITRITE)   (NITROGLYCERIN)   (PAPAVERINE)

SAMOYLOVA, Z.T.

Moscow Pharmacology Society and the pharmacology section of
the Moscow Physiology Society. Farm. i toks. 25 no.2:250-251
Mr-Ap '62.   (MIRA 15:6)

(PHARMACEUTICAL SOCIETIES)

SAMOYLOVA, Z.T.

Effect of pharmacological preparations on coronary circulation
under conditions of chronic tests on dogs with experimental
atherosclerosis. Farm.i toks. 24 no.6:682-686 N-D '61.
                                              (MIRA 15:11)

1. Institut terapii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR
prof. A.L.Myasnikov).
                    (CARDIOVASCULAR AGENTS)   (ARTERIOSCLEROSIS)

SAMOYLOVA, Z.T.

Moscow Pharmacological Society and the Section on Pharmacology of the Moscow Physiological Society. Farm.i toks. 24 no.6:755-758 N-D '61. (MIRA 15:11)

(PHARMACEUTICAL SOCIETIES)

SAMOYLOVA, Z.T.; SMIRNOVA, S.; FROLOV, S.; TANK, L.I.; ZAPADNYUK, V.I.

Brief news. Farm. i toks. 25 no.4:502-508 Jl-Ag '62.

(MIRA 17:10)

SIMOYICVA, Z.T.

Moscow Pharmacological Society. Farm. i toks. 25 no.6:757-760
N-D '62.   (MIRA 17:8)

RAYSKINA, M. Ye.; KHODAS, M. Ya.; SAMOYLOVA, Z.T.

Significance of blood supply disorders of the heart in the
mechanism of death during the acute stage of myocardial
infarct. Kardiologiia 3 no.4:45-50 Jl-Ag'63   (MIRA 17:3)

1. Iz kafedry patofiziologii (zav. - prof. S.M. Leytes)
TSentral'nogo instituta usovershenstvovaniya vrachey.

KHODAS, M.Ya. (Moskva); SHIMELIOVICH, L.B. (Moskva); RAYSKINA, M.Ye.
    (Moskva); SAMOYLOVA, Z.T. (Moskva)

1. Iz kafedry patofiziologii (zav. - prof. S.M.Leytes) TSentral'-
nogo instituta usovershenstvovaniya vrachey.
        (HEART--MUSCLE) (OXYGEN IN THE BODY)

SAMOYLOVA, Z.T.

Moscow Pharmacological Society. Farmakol. toksik. 26 no.3:
391-394   My-Je'63   (MIRA 17:2)

SAMOYLOVA, Z.T.

      Moscow Pharmacological Society. Farm. i toks. 26 no.4:507-508
      Jl-Ag'63   (MIRA 17:4)

RAYSKINA, M.Ye.; SAMOYLOVA, Z.T.; KHODAS, M.Ya.

Importance of disorders in the blood supply of the heart in the death mechanism during the acute stage of myocardial infarction. Trudy Inst. klin. i eksper. kard. AN Gruz. SSR 8:419-422 '63.
(MIRA 17:7)

1. Kafedra patolfiziologii TSentral'nogo instituta dlya usovershenstvovaniya vrachey, Moskva.

SAMOYLOVA, Z.T.; RAYSKINA, M.Ye.; KHODAS, M.Ya. (Moskva)

Significance of disorders of the heart blood supply in the
mechanism of death from myocardial infarct in dogs with
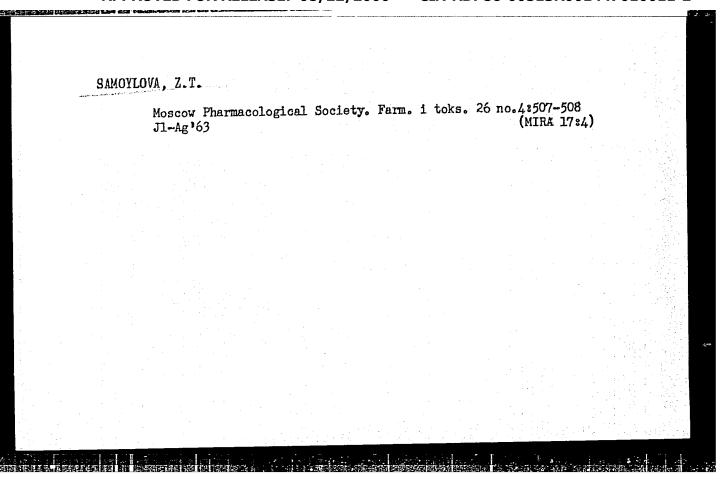atherosclerosis. Pat. fiziol. i eksp. terap. 7 no.4:
22-26 Jl-Ag '63.
(MIRA 17:9)

1. Iz kafedry patofiziologii (zav.- prof. S.M. Leytes)
TSentral'nogo instituta usovershenstvovaniya vrachey.

SAMOYLOVA, G.I.

Moscow Pharmacological Society. Farm. i toks. 26 no.2:250-251
Mr-Ap '63.

(MIRA 17:8)

SAMOYLOVA, Z.T.

Change in the effects of the vagus nerve on the coronary
vessels under the influence of vasodilator substances.
Farm. i toks. 25 no.5:569-573 S-O '64.   (MIRA 18:1)

1. Institut terapii AMN SSSR.

RAYSKINA, M.Ye.; SAMOYLOVA, Z.T.; KHODAS, M.Ya.

Effect of acetylcholine on the oxygen balance of the heart.
Farm. i toks. 27 no.4:451-454 Jl-Ag '64.

(MIRA 17:11)

1. Kafedra patofiziologii (zav. - prof. S.M. Leytes) TSentral'-
nogo instituta uscvershenstvovaniya vrachey, Moskva.

SAMOILOVA, L.T.

Change in the effects of the vagus nerve on the coronary vessels
from the influence of vasodilator substances. Farm. i toks. 25
no.5:569-573 S-O '62.   (MIRA 18:1)

1. Institut terapii AMN SSSR.

RAYSKINA, M.Ye.; SAMOYLOVA, Z.T.; KHODAS, M.Ya.

Effect of adrenaline, noradrenaline and acetylcholine on the
oxygen balance of the heart following a ligation of the coronary
artery. Pat. fiziol. i eksp. terap. 9 no.3:16-20 My-Je '65.
(MIRA 18:9)

1. Kafedra patologicheskoy fiziologii (zav.- prof. S.M. Leytes)
TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

YANISHEVSKAYA, M.N.; DUBOVITSKAYA, N.K.; KLYUCHAREVA, T.Ye.; MITRIKINA, P.Ye.;
PEKSHEVA, M.N.; SAMOYLOVA, Z.Ye.; TYUNEYEVA, G.A.

Difficulties in diagnosing some atypical dysenterial bacteria. Med.
zhur. Uzb. no.2:20-22 F '62.   (MIRA 15:4)

1. Iz kafedry mikrobiologii (zav. - prof. P.F.Samsonov) Tashkentskogo
gosudarstvennogo meditsinskogo instituta i laboratoriy gorodskoy i
rayonnykh sanitarno-epidemiologicheskikh stantsiy Tashkenta.
          (SHIGELLA)   (DYSENTERY)

SAMOYLOVA-YAKHONTOVA, N. S.

SEE ALSO   YAKHONTOVA, N. S.

SAMOYLOVA-YAKHONTOVA, N.S.

Minor Planets (1962). Biul. Inst. teor. astron. 9 no. 6:379-387
'64.

(MIRA 17:9)

SAMOYLOVA-YAKHONTOVA, N.S.

    Minor planets, 1963. Biul. Inst. teor. astron. 10 no.3:173-180
    '65.   (MIRA 18:8)

GRAKHOVSKIY, R.; SAMOYLOVICH, A.

Automatic engine preheaters.   Za rul. 18   no.2:22-23   F '60.
(MIRA 13:6)

1. Gosudarstvennyy soyuznett ordena Trudovogo Krasnogo Znameni
nauchno-issledovatel'skiy avtomobil'nyy i avtomotornyy institut.
(Automobiles--Cold weather operation)

The specific heat of aqueous solutions of strong electrolytes. A. G. Samoylovich. *Physik. Z. Sowjetunion* 4, 843–53(1933)(in English).—The drop in sp. heat is due to hydration, which decreases the no. of degrees of freedom, and to depolymerization of water. Polarization increases the sp. heat, this effect prevailing in concd. soln.

Louis Goldman

A S A . S L A   METALLURGICAL LITERATURE CLASSIFICATION

CA

PROCESSES AND PROPERTIES INDEX

Applicability of the Guy theory to the case of the adsorption of radium ions on glass. V. M. Vdovenko and A. G. Samoilovich. J. Phys. Chem. (U. S. S. R.) 7, 583-8(1936)(in Russian); Acta Physicochim. U. R. S. S. 4, 613-6(1936)(in English).—Adsorption isotherms for Ra ions at concns. from 10^{-7} to 10^{-11} mols./cc. on glass are given for various p_H values from 3.0 to 7.0, and are linear when graphed in log-log terms. The log of the adsorption is also almost a linear function of the p_H, but falls more rapidly at p_H less than 2.5. On the basis of these data, V. and S. conclude that the Guy theory for multivalent ions (cf. Frumkin, Ergebnisse der exakt Naturwiss. 235(1928)) is applicable to this case also.

P. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Nernst's heat theorem. A. G. Samoilovich. J.
Expel. Theoret. Phys. (U. S. S. R.) 8, 1302–4 (1938).—
The Nernst theorem is in contradiction to classical thermo-
dynamics. All attempts to derive it from classical con-
ceptions are "successful" only when the derivations con-
tain inner contradictions. Low-temp. thermodynamics
can be formulated only on the basis of quantum theory.
                                                    F. H. Rathmann

ASM–3LA   METALLURGICAL LITERATURE CLASSIFICATION

SAMOYLOVICH, A.

On the Influence of the State of Ordering on the Elastic Constants of β-Brass. A. Samoylovich (Zhur. Eksper. Teoret. Fiziki, 1944, 14, (8), 205-220).—[In Russian]. Electrostatic forces play practically no part in the increase in the elastic moduli of β-brass which occurs during disordering. The principal factors are apparently the overlapping electron envelopes of the ions and the relation between the oscillatory levels of the lattice and the state of ordering.—N. A.

METALLURGICAL LITERATURE CLASSIFICATION

SAMOYLOVICH, A. G.

"Elastic Constants of Brass of Influences by the Ordered State of the Molecule," Zhur. Eksper. i Teoret. Fiz., 14, No. 6, 1944; Dept. of Metallophysics, Gor'kiy Physico-Tech. Inst., -1943-.

SAMOYLOVICH, A

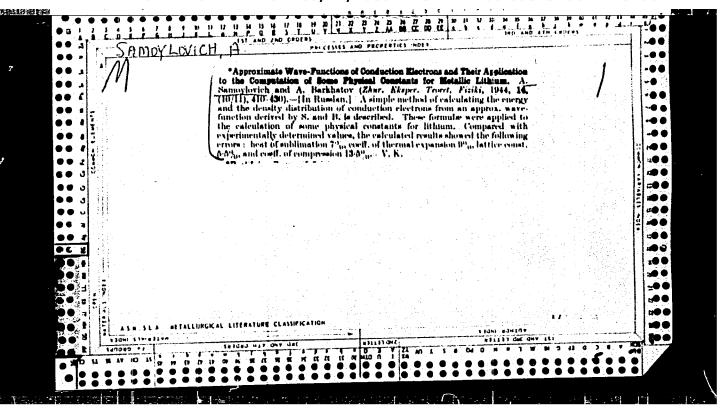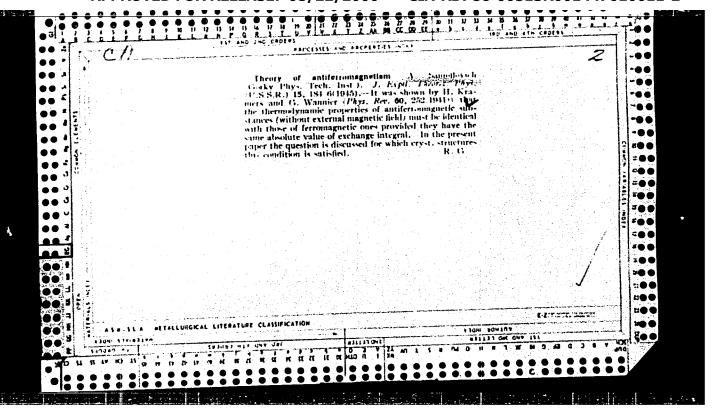"Approximate Wave-Functions of Conduction Electrons and Their Application to the Computation of Some Physical Constants for Metallic Lithium. A. Samoylovich and A. Barkhatov (Zhur. Eksper. Teoret. Fiziki, 1944, 14 (10/11), 410-430).—[In Russian.] A simple method of calculating the energy and the density distribution of conduction electrons from an approx. wave-function derived by S. and B. is described. These formulae were applied to the calculation of some physical constants for lithium. Compared with experimentally determined values, the calculated results showed the following errors: heat of sublimation 7%, coeff. of thermal expansion 0%, lattice const. 0.6%, and coeff. of compression 13.6%.—V. K.

ASM SLA   METALLURGICAL LITERATURE CLASSIFICATION

C/1

2

Theory of antiferromagnetism. A. Samoilovich (Gorky Phys. Tech. Inst.), *J. Expl. Theoret. Phys.* (U.S.S.R.) 15, 181-6(1945).--It was shown by H. Kramers and G. Wannier (*Phys. Rev.* 60, 252 1941) that the thermodynamic properties of antiferromagnetic substances (without external magnetic field) must be identical with those of ferromagnetic ones provided they have the same absolute value of exchange integral. In the present paper the question is discussed for which cryst. structures this condition is satisfied.   R. G.

A S B - S L A   METALLURGICAL LITERATURE CLASSIFICATION

SAMOILCVICH, A. G.

Mbr., Gor'kiy Scientific Research Physical Technical Institute, -1944-.

"Electronic Theory of Surface Tension in Metals," Dok. AN, 46, No. 9, 1945

*SAMOYLOVICH, A. G.

"Electronic Theory of the Surface Tension of Metals", Acta Phys., 97, 20, No. 1, 1945;
Gorky Phys-Tech Res. Inst., Dept. for the Phys. of Metals, c1944-.

PROCESSES AND PROPERTIES INDEX

Electronic theory of the surface tension of metals. A. Samsdovich. J. Exptl. Theoret. Phys. U.S.S.R. 16, 135-50(1946)(English summary).—Math. The author introduces quantum-mech. considerations and a Fermi distribution of electrons in the theory of capillary forces at the surface. His resulting formula for surface tension $\sigma = 0.30\,\mu^{4/3} - 0.76\,\mu^{2/3}$, where μ is the av. of pos. charges is in good agreement with exptl. data on univalent atoms. The agreement is poorer in the case of bivalent metals.   S. Pakswer

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

3-204. **Surface Tension of Metals.** A. G. Samollavich. *Journal of Physical Chemistry (U.S.S.R.)*, v. 21, no. 2, 1947. p. 161-162. (In Russian.)

A mathematical analysis shows that the expression proposed for surface tension does not depend upon the model which was used for its development.

SAMOYLOVICH, A. G.

"Review of P. G. Bergman's Book 'Introduction to the Theory of Relativity'." USPEKHI FIZ. NAUK, 35, No. 4, 1948;

CA

9

Trans. Am. Sw. ....
Theory of the surface tension of metals. A. G. Samoy-
lovich. *Zhur. Fis. Khim.* 23, 1127(1949).—Glauber-
man's theory (*C.A.* 43, 4991c) is criticized.   J. J. B.

SAMOYLOVICH, A. G.   168T96

USSR/Physics - Ferromagnetics   Sep 50
                Magnetism, Galvano-

"The Theory of Galvonomagnetic Phenomena in Ferro-
magnetics," A. G. Samoylovich, V. L. Kon'kov,
Chernovits State U

"Zhur Eksper i Teoret Fiz" Vol XX, No 9, pp 783-
786

Proposes method for constructing subject theory.
Derives certain results by this method. Sub-
mitted 16 Jan 50.

168T96

SAMOYLOVICH, A.Q.

USSR/Electricity - Ferromagnetics   Mar 52

"Additional Resistance of Ferromagnetic Metals,"
A. G. Samoylovich, V. A. Yakovlev, Chernovtsy
State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 3, pp 350-
355

Considers the influence of spontaneous magnet-
ization of a ferromagnetic crystal upon its elec
resistance. Establishes thermal dependence of the
addnl resistance in a low temp range. Received
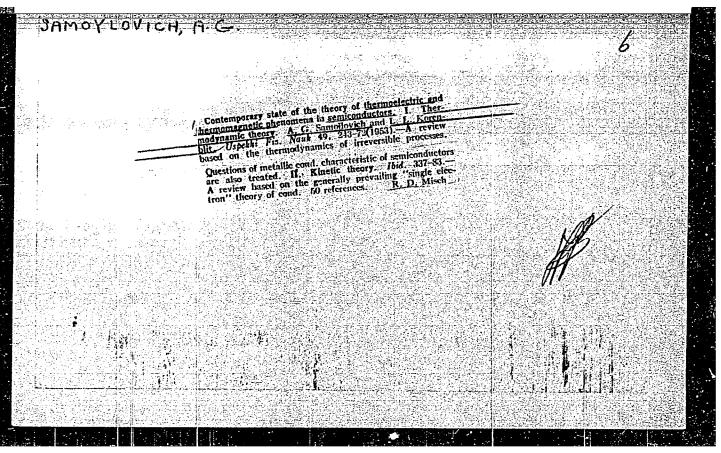23 Oct 51.

215T20

SAMOYLOVICH, A.G.

USSR/Physics - Ferromagnetics   Mar 52

"Thermoelectric Phenomena in Ferromagnetics Near the
Curie Temperature," A. G. Samoylovich, L. L. Koren-
blit, Chernovtsy State U

"Zhur Eksper i Teoret Fiz" Vol XXII, No 3, pp 360-
366

Thermal dependence of Tompson and Peltier coeffs in
ferromagnetics is computed near the Curie temp on
the basis of s-d model created by Vonsovskiy (cf:
"Zhur Eksper i Teoret Fiz" 16, 981, 1946). Received
9 Jun 51.

215T77

SAMOYLOVICH, A-G.

7

3839. Samoilovich, A. G., Thermodynamics and statistical physics [Termodinamika i statisticheskaya fizika], Moscow, Gosud. Izd. Tech.-Teor. Lit., 1953, 439 pp.

An extended survey of the general analytical foundations of thermodynamics and applied statistical mechanics is presented. The first part, entitled "Fundamental principles of thermodynamics," provides an intensive and comprehensive mathematical development of the first and second laws. The role of equilibrium states is clearly emphasized and sufficient flexibility is provided to allow for many types of thermodynamic displacements and forces. The second law is introduced by a consideration of Pfaffian forms in the Caratheodory manner and is subsequently re-examined from the viewpoint of the Carnot cycle. The various relations among the thermodynamic functions are considered in relation to maximum work and equilibrium. The thermodynamics of dielectrics, magnetism, and electrochemistry is presented. Brief mention is made of the nature of irreversible processes in relation to the Clausius inequality.

The second part, "Fundamental principles of statistical physics," provides a conventional systematic development of equilibrium statistical distributions leading to the identification of the state sum, thermodynamic probability, and thermodynamic temperature. The relations between the probability distributions and the thermodynamic functions are emphasized.

Part three, "Some applications of statistical physics to the investigation of classical systems," develops conventionally such items as the virial equation of state for imperfect gases, the Langevin function for dielectric polarization, second-order transition phenomena, and the fundamentals of the thermodynamics of electric and magnetic fields.

The last part, "Quantum statistics," develops the heat capacity for a simple harmonic oscillator as occurring in metals and gases. The Fermi-Dirac and Bose-Einstein statistics are developed and applied to the photon and electron gases. A general formulation is provided for the third law or Nernst heat theorem. Throughout, the treatment is largely analytical and consistent with other current treatments. Frequent reference is made to Engels, Marx, and Lenin.   —N. A. Hall, USA.

SAMOYLOVICH, A. G.

6

Contemporary state of the theory of thermoelectric and thermomagnetic phenomena in semiconductors. I. Thermodynamic theory. A. G. Samoilovich and L. L. Korenblit. *Uspekhi Fiz. Nauk* 49, 243-73(1953).—A review based on the thermodynamics of irreversible processes. Questions of metallic cond. characteristic of semiconductors are also treated. II. Kinetic theory. *Ibid.* 337-83.— A review based on the generally prevailing "single electron" theory of cond. 60 references. R. D. Misch

SAMOYLOVICH, A. G, and KORENBLIT, L.L,

"Present Status of the Theory of Thermoelectric and Thermomagnetic Phenomena of Semiconductors," Usp. Fiz. Nauk, 49, No.3, pp 337-383, 1953

Part II, kinetic theory. Part I appeared in issue No.2. State that the kinetic theory of thermoelectric ohenomena, in contrast to the thermodynamic theory, proceeds from definite model representations concerning the structure of metals and other electrical conductors, and has as its main task the calcn of the kinetic coefs. Derive the distribution functions and kinetic eqs formally solve the kinetic eqs; generalize the laws of elec conductivity in the kinetic theory; derive the free path of electrons and the kinetic eqs in the high-temp case; discuss thermoelec phenomena in univalent metals as high temps, equilibrium of electrons in semiconductors, thermoelectric phenomena in semiconductors with atomic lattice and in ionic semiconductors; derive distribution function in case of weak magnetic fields; discuss thermomagnetic and galvanomagnetic phenomena in univalent metals at high temps and in semiconductors; compare the theory of elec phenomena in semiconductors with expts. Conclude that the urgent problem of analyzing the processes governing energy exchange of current-carriers with the lattice is more important than the new problems of statistically averaging quasi-particle parameters which are functions of temp. Cite 32 allied works (22 Soviet, 10 Western).   257T41

SAMCY LOVICH, A-G

SUBJECT   USSR/MATHEMATICS/Statistics   CARD 1/1   PG - 62
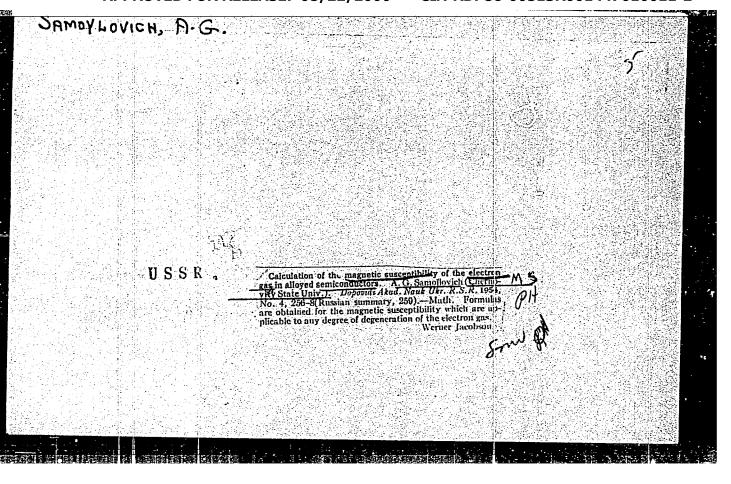AUTHOR   SAMOJLOVIĆ A.G.
TITLE   Statistics of the electrons in semi-conductors and canonical
            distribution with variable number of particles.
PERIODICAL Dopovidi Akad. Nauk ukrain. RSR 3, 174-177 (1954)
            reviwed 6/1956

The canonical distribution with variable number of particles is applied for
deriving the equation which determines the chemical potential in the micture
semi-conductor. It is shown that the formulas usually applied for calculating
the chemical potential require the introduction of a correction, and this
changes the condition for the appearance of the degeneration of the electron
gas. The conditions for the appearance of the degeneration in mixture semi-
conductors are determined.

SAMOYLOVICH, A.G.

U S S R

Calculation of the magnetic susceptibility of the electron gas in alloyed semiconductors. A. G. Samoilovich (Chern-vRy State Univ.). *Dopovidi Akad. Nauk Ukr. R.S.R.* 1951, No. 4, 256-8(Russian summary, 250).—Math. Formulas are obtained for the magnetic susceptibility which are applicable to any degree of degeneration of the electron gas. Werner Jacobson

SAMOYLOVICH, A.G.; KONONOVA, M.V.

Magnetic susceptibility of unalloyed semiconductors. Dop. AN URSR
no.5:365-367 '54.   (MLRA 8:7)

1. Chernivets'kiy derzhavniy universitet. Predstaviv diysniy chlen
AN URSR V.E. Lashkar'ov. (Semiconductors--Magnetic properties)

SAMOYLOVICH, A.G.

Magnetic properties of semiconductors from the point of view of the
zone theory. Dop. AN URSR no.5:368-370 '54.   (MIRA 8:7)

1. Chernivets'kiy derzhavniy universitet. Predstaviv diysniy chlen
AN URSR V.E. Lashkar'ov. (Semiconductors--Magnetic properties)

S AMOYLOVICH, A. G.

Call Nr: AF 1095038

AUTHOR: Samoylovich, A. G.

TITLE: Thermodynamics and Statistical Physics
(Termodinamika i statisticheskaya fizika)

PUB. DATA: Gosudarstvennoye izdatel'stvo tekhniko-teoreticheskoy
literatury, Moscow, 1955, 2nd ed., 368 pp., 8,000 copies.

ORIG. AGENCY: None

EDITOR: Tkachuk, S.G., and Kuznetsova, Ye.B., Tech. Ed.
Tumarkina, N.A.; Ed. of the Publishing House: Gurov,K.P.

PURPOSE: Approved by the Ministry of Higher Education as a
textbook for state universities, this book is said to
be the first complete text written for both parts of
the course on thermodynamics and statistical physics.

COVERAGE: See Table of Contents. The book deals with Russian
contributions. There are 51 references, of which 40
are USSR, 1 German, and the remainder translations into
Russian. Personalities mentioned include: Korenblit,L.L.,
Candidate of Phys.-Math.Sciences, Chernovtsy State

Card 1/10.

SOV/58-59-5-10953

AUTHORS: Samoylovich, A.G., Yakovlev, V.A.

TITLE: The Kinetics of Semiconductor Photoconductivity

PERIODICAL: Nauk. zap. Chernivets'k. un-t, 1955, Vol 12, pp 167 - 175 (Ukr.; Russ. résumé)
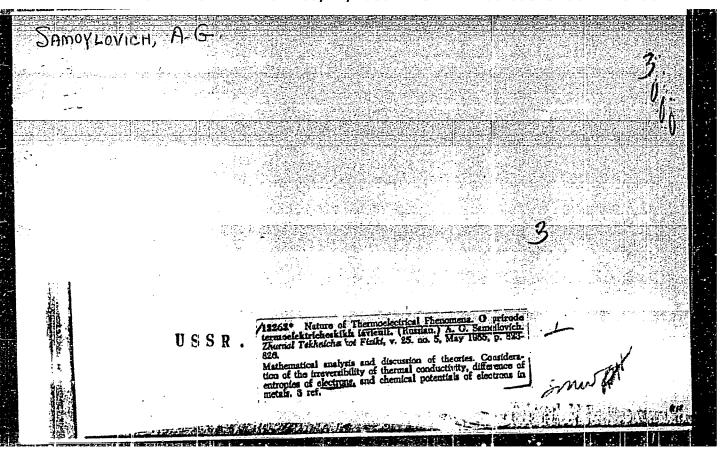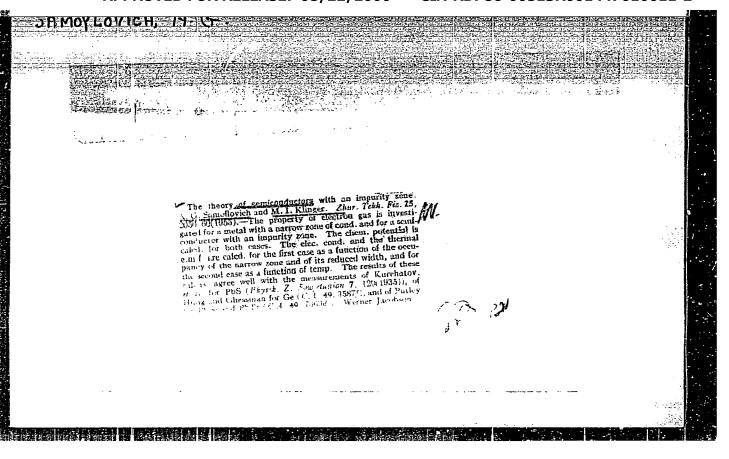
ABSTRACT: The authors studied the character of photocurrent in relation to time
             as the light which illuminates the semiconductor is switched on and off.
             The introduction into the kinetic equation of a "statistical term" which
             takes the thermal interaction of the levels into account makes it
             possible, in the main, to explain the breaking up of semiconductors that
             Gurevich and Tolstoy propounded (Gurevich, Tolstoy, Dokl. AS USSR, 1950,
             Vol 72, p 473); namely, the hyperbolic or exponential character of the
             variation of the photocurrent is directly caused by the character of
             steady semiconductor photoconductivity. (Chernivetsk. un-t, USSR).

                                                        The authors' résumé

Card 1/1

SAMOYLOVICH, A-G.

USSR.

/18262* Nature of Thermoelectrical Phenomena. O prirode termoelektricheskikh iavlenii. (Russian.) A. G. Samoilovich. Zhurnal Tekhnicheskoi Fiziki, v. 25. no. 5, May 1955, p. 823-826.

Mathematical analysis and discussion of theories. Considera- tion of the irreversibility of thermal conductivity, difference of entropies of electrons, and chemical potentials of electrons in metals. 3 ref.

SAMOYLOVICH,

The theory of semiconductors with an impurity zone. A. G. Samoilovich and M. I. Klinger. Zhur. Tekh. Fiz. 25, 2091-99 (1955).—The property of electron gas is investigated for a metal with a narrow zone of cond. and for a semiconductor with an impurity zone. The chem. potential is calcd. for both cases. The elec. cond. and the thermal e.m.f. are calcd. for the first case as a function of the occupancy of the narrow zone and of its reduced width, and for the second case as a function of temp. The results of these calcd. agree well with the measurements of Kurchatov, et al. for PbS (Physik. Z. Sowjetunion 7, 120, 1935)], of Hung and Glessman for Ge (C.A. 49, 3587c), and of Putley and Pearson C.A. 40, 7030d). Werner Jacobson

SAMOYLOVICH, A.G.

"Semiconductors in modern physics". "Semiconductors" (popular
science series). A.F.Ioffe. Reviewed by A.G.Samoilovich. Usp.
fiz.nauk 57 no.1:165-169 S '55.   (MLRA 9:1)

(Semiconductors) (Joffe, Abram Fedorovich, 1880-)

SAMOYLOVICH, A.G.

Category : USSR/Electricity - Semiconductors   G-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 1567

Author   : Samoylovich, A.G., Korenblit, L.L.
Title   : Degeneracy of Electron Gas in Semiconductors

Orig Pub : Uspekhi fiz. nauk, 1955, 57, No 4, 577-630

Abstract : A systematic discourse on various theoretical problems involved in the
           degeneracy of electrons and holes in semiconductors, the temperature depen-
           dence of the chemical potential, and the effect of the degeneracy on the
           magnetic properties and on the kinetic scattering coefficient of the electrons
           by the impurity ions. Bibliography, 42 titles.

Card   : 1/1

SAMOYLOVICH, A.G.

USSR/ Physics - Excitons

Card 1/1   Pub. 22 - 11/50

Authors   : Samoylovich, A. G., and Korenblit, L. L.

Title   : Magnetic and optical characteristics of excitone

Periodical : DOK. AN SSSR 100/1, 43-44, Jan. 1, 1955

Abstract   : An exciton, defined as an electron and a hole connected together, is studied
              mathematically. The Hamiltonian function derived from a Lagrangian
              function, expressing the physical system of an excitone, is simplified and
              interpreted in the view of its magnetic and optical properties. Two
              USSR references (1949 and 1953).

Institution: State University at Chernovitsy

Presented by: Academician A. F. Ioffe, July 12, 1954

SAMOYLOVICH, A.G. SAMOYLOVICH,A.G.
CARD 1 / 2

PA - 1889

SUBJECT   USSR / PHYSICS
AUTHOR   SAMOJLOVIČ,A.G., KONDRATENKO,V.M.
TITLE   On the Theory of Atomic Semiconductors.
PERIODICAL   Žurn.eksp.i teor.fis,31,fasc.4,596-608 (1956)
                Issued: 1 / 1957

On the basis of the polar crystal model of VONSOVSKIJ several problems connected with the theory of the absorption of light and the theory of photoconductivity in atomic semiconductors are investigated in consideration of exitons. The exchange energy is neglected on this occasion, which leads to the degeneration of the lower energy band of the spectrum to an energy level. If the excitation energy of the exitons is greater than the initial energy of the current states, the states which correspond to the exitons and current states overlap. The paper begins with dealing with the basic features of the derivation of the HAMILTONIAN of the polar semiconductor model, on which occasion the well-known representation of the HAMILTONIAN by quantized wave functions serves as a starting basis. Also the expressions for the matrix elements are written down. The here mentioned expression for the HAMILTONIAN, which takes the exiton states into account, contains terms of the third order with respect to the operators of second quantization. This HAMILTONIAN is then transformed for the space of quasi-momenta; the necessary canonical transformation is written down. The HAMILTONIAN thus transformed can be written down as the sum of the energies of elementary excitations, and also the terms of the third order are written down. The physical significance of the individual terms of the third order is ex-

plained, on which occasion the following processes are mentioned: Annihilation of a left exiton with transfer of its energy to a hole, creation of a left exiton at the expense of the kinetic energy of a hole, spontaneous annihilation of a right or of a left exiton with the simultaneous production of a pair and of a hole. There follow some remarks on the HAMILTONIAN of the external disturbance which may be expressed as follows by means of quantized wave functions: $H' = \int \Psi^+ (x) U(\vec{r}, t) \Psi (x) \, dx$. Here $U(\vec{r}, t)$ denotes the operator of the external disturbance. By inserting the quantized wave functions and by summation over the spins $H' = \sum U_{q_1 i_1, q_2 i_2} a^+_{q_1 i_1 s} a_{q_2 i_2 s}$. is obtained. Here $U_{q_1 i_1, q_2 i_2}$ denotes the matrix element of the operator $U(r,t)$ and a^+ and a denote the usual FERMI operators of second quantization for the production and annihilation respectively of an electron in the corresponding node. The HAMILTONIAN of the external disturbance contains terms which describe also complicated processes as e.g. the simultaneous absorption of light with excitation of an exiton and with scattering at the holes. Next, expressions for the probability of the decay of an exiton on an admixture with production of a pair and a hole is derived. In conclusion the kinetics of photoconductivity is computed.

INSTITUTION: State University of Cernovic

Szmoylovich, A. G.

AUTHORS	Samoylovich, A.G., Tovstyuk, K.D. 57-8-15/36
TITLE	The Energy Spectrum of Current Carriers in Semi-conductors of the Germanium Type. (Energeticheskiy spektr nositeley toka v poluprovodnikakh tipa germaniya.)
PERIODICAL	Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 8, pp.1753-1763 (USSR)

ABSTRACT   Here the authors try to combine two of the most important
ideas of modern semiconductor theory: renunciation of the
single-electron approach and the investigation of the
problem from the point of view of the multi-electron
theory within the frame of the quasi-particle method,
and secondly the taking into account of the nature of
chemical compound. A model is proposed which, on the
occasion of the investigation of the energy spectrum, makes
possible to respect the nature of the chemical compound.
The authors show that the nodal lattice is essential for
the electrons and the ruled lattice for the holes. The
results of the investigations showed that it is just this
with which the characteristic properties of electrons and
holes in semiconductors of the Germanium type are connected.
The energy spectrum of the current carriers in Germanium
CARD 1/2   and Si is investigated. The authors show that the

57-8-15/36

The Energy Spectrum of Current Carriers in Semiconductors of the
Germanium Type.

characteristics of the energy spectrum of holes does not
depend on the spino*orbital interaction but on the distri-
bution of the clouds of valence-electrons, i.e. on the
nature of the chemical compound. The authors show that by
means of a corresponding selection of wave functions an
electron spectrum coinciding with experimental data can be
obtained.
(With 2 illustrations and 3 Slavic references)

ASSOCIATION: Chernovtsy State University.
             (Chernovitskiy gosudarstvennyy universitet.)
SUBMITTED: February 25, 1957
AVAILABLE: Library of Congress.

CARD 2/2

A Note on the Quantum Theory of the Kinetic Phenomena   57-12-1/19
in Semiconductors.

was omitted here, because the investigation aimed at purely
methodical purposes. In the special cases investigated here,
it was assumed, that the shape of the function $\tau(H_o)$ is
identical to that of $\tau(\varepsilon)$ in the case of an absence of
magnetic field. τ denotes the relaxation period, H_o the
operator of the "kinetic" energy of the particle in the
magnetic field. For the sake of simplicity the tensorial
character of the effective electron-mass was not taken into
consideration. For this reason, in the case of several
effects no anisotropy was obtained. The case of a mixed
conductivity was also neglected. The essential result of
this paper consists in showing, that the quantum corrections
are of no great importance at helium-temperatures. A few
longitudinal effects are of interest, which are missing in
a semi-classical approximation. An investigation of these
may permit the determination of the effective mass. In the
case of an unipolar conductivity the investigation of these
effects permits a selection of the receptivity of the
current carriers in semiconductors. This idea was first
pronounced by Ya. G. Dorfman (reference 7). The present

Card 2/5

A Note on the Quantum Theory of the Kinetic
Phenomena in Semiconductors.

investigation was conducted in connection with it. As to
details the distribution function operator is deduced here
and the generalized laws for the electric and thermal
conductivity are given. On the occasion of the investigation
of the galvanic and thermomagnetic phenomena in ion-
semiconductors it is pointed to the fact, that in the case
of ion-semiconductors of the non-polar type the relaxation
period of the current carriers may be considered to be
independent from the energy and constant in the case of an
interaction with the phonones. For the reason, that in such
a case the computation of the kinetic coefficients is
greatly simplified, it is here considered in the first
instance. Two cases are considered here: Weak fields with
$x^* \ll 1$ and strong fields with low temperatures and small
effective masses $x^* \gtrsim 1$. There follows the investigation
of the galvanic and thermomagnetic phenomena in semicon-
ductors of the atomic type, and of the kinetic phenomena
in semiconductors at $\nabla T \parallel \vec{E} \parallel \vec{H}$ (longitudinal effects) and

Card 3/5

A Note on the Quantum Theory of the Kinetic
Phenomena in Semiconductors.

finally the dependence of the chemical potential in semi-
conductors on the magnetic field. $\mathcal{H}$ denotes the magnetic
field, which is assumed to be directed along the z-axis, and
E the potential of the electric field. On the basis of the
investigation conducted here the effects connected with the
quantization of the paths and an evaluation of their magni-
tude are explained. The conclusion may be drawn, that the
taking into consideration of the quantization of the paths
of the current carriers in a magnetic field has a certain
effect of such and such a degree on the magnitude of all
known kinetic effects. In this case the quantity $f\nu$
determining the ratio between the "zero" magnetic energy

of the oscillators $\frac{1}{2}\hbar\,\omega_o^*$ and the average kinetic energy

of the particles kT represents the essential parameter,
which determines the effectiveness of the quantization of
the energy-particle spectrum in the magnetic field. It is
shown, that in the case of $f\nu \ll 1$ the consideration of the
quantization of the paths leads to only insignificant
modifications of the ordinary formulae for the electric,
thermoelectric and other effects. Only in the case of

Card 4/5

A Note on the Quantum Theory of the Kinetic   57-12-1/19
Phenomena in Semiconductors.

> $f\nu \geqslant 1$ noticeable modifications may be expected. In general
> however, the quantity $f\nu$ is comparatively small and
> varies between the values of $1/10$ to 10. The evaluation
> given here has only a general character. The mobility of
> the current carriers also plays a certain role. There are
> 2 figures, 1 table, and 10 references, 5 of which are
> Slavic.

ASSOCIATION: Institute for Semiconductors AN USSR, Leningrad (Institut
               poluprovodnikov AN SSSR Leningrad).

SUBMITTED: April 24, 1957.

AVAILABLE: Library of Congress

Card 5/5

Samoylovich, A. G.

AUTHORS: Samoylovich, A. G.,   Klinger, M. I.,   57-12-13/19
            Nitsovich, V. M.

TITLE: On the Correlation Between the Electrons in Narrow
            Admixture Zones of Semiconductors (O korrelyatsii mezhdu
            elektronami v uzkikh primesnykh zonakh poluprovodnikov).

ABSTRACT: In this paper, the influence of the correlation between
            the electrons on the electron distribution in a narrow
            admixture zone and on the electron distribution according
            to quasi-momenta. The investigation is started from the assump-
            tion, that only electrons situated in one admixture centre
            may interact with each other. From the result obtained,
            (equation) it can be seen, that in the case of $A^* = 0$ (no
            correlation) the ordinary statical formulae by Fermi-Dirac
            (with an exactitude including A^{*2}) are obtained. In the
            case of $A^* \to \infty$, (infinite correlation, implying the
            absolute impossibility of finding two electrons in one
            admixture atom) a further formula is deduced from the former
Card 1/2   one. The formulae deduced here, show, that the correlation

On the Correlation Between the Electrons in Narrow Admixture 57-12-13/19
Zones of Semiconductors

    between the electrons leads to a considerable scattering
    of the electrons within the zone and promotes the occurrence
    degeneration. A more exact investigation of the influence
    of the correlation between electrons on the kinetics of
    processes in the narrow admixture zone will be conducted by
    V. M. Nitsovich in another place.

ASSOCIATION: Institute for Semiconductors AN USSR, Leningrad
     (Institut poluprovodnikov AN SSSR Leningrad)

SUBMITTED: March 27, 1957

AVAILABLE: Library of Congress

Card 2/2

AUTHOR   SAMOYLOVICH, A.G.   53-3-8/30
TITLE   Ioffe, A.F., Stil'bans, L.S., Iordanishvilli, Ye.K., Stavitskaya, T.S.,
                ·Thermoelectric Refrigeration".(Publishing House of the Academy of
                Science, Moscow-Leningrad, 1956, p.1o8, 3,7o Rb.)
                (Ioffe, A.F., et al. "Termoelektricheskye khlaz'dstye." (Russian)
PERIODICAL   Uspekhi Fiz. Nauk, 1957, Vol 62, Nr 3, pp 375 - 376 (U.S.S.R.)

ABSTRACT   The book consists of three chapters dealing with refrigeration by
                thermoelectric means, giving theoretical and experimental data.
                In chapter 1. the theory of thermoelectric refrigeration is developed.
                Further, the efficiency of a cascade battery is calculated and it is
                shown that more than two steps are useless.
                Chapter 2. "The experimental investigations of thermoelectric proper-
                ties of semiconductors" above all describes and evaluates the methods
                for measuring the Peltier and Thompson coefficients, the EMF, the
                electric conductivity, etc. The thermoelectric properties of the best
                initial material for a thermoelement PbTe - PbSe are most thoroughly
                treated.
                Chapter 3. deals with the application of thermoelectric refrigeration.
                It is already today possible to construct household refrigerators with
                thermoelements, which are more economical than absorption refrigera-
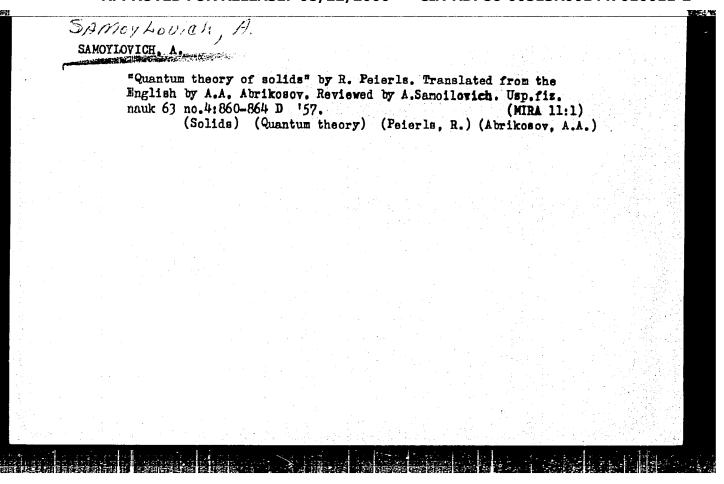Card 1/2   tors.

53-3-8/10

Ioffe, A.F., Stil'bans, L.S., Iordanishvilli,Ye.K., Stavitskaya, T.S.,
"Thermoelectric Refrigeration". (Publishing House of the Academy of
Science, Moscow-Leningrad, 1956, p.108, 3,7o Rb.)

The book which is written in clear language and is very well subdivi-
ded may be of use for physicists, chemists and refrigeration engineers.

ASSOCIATION   Not given
PRESENTED BY
SUBMITTED
AVAILABLE   Library of Congress

Card 2/2

SAMoyLouich, A.

SAMOYLOVICH, A.

"Quantum theory of solids" by R. Peierls. Translated from the
English by A.A. Abrikosov. Reviewed by A.Samoilovich. Usp.fiz.
nauk 63 no.4:860-864 D '57.   (MIRA 11:1)
          (Solids) (Quantum theory) (Peierls, R.) (Abrikosov, A.A.)

SAMOYLOVICH, A.G.[Samoylovych, A.H.]; KONDRATENKO, V.M.

On the theory of atomic semiconductors. Part 1. Derivation of
the hamiltonian of an atomic semiconductor in a polar crystal
model [In Ukrainian with summary in English]. Ukr.fiz.zhur. 3
no.1:41-52 Ja-F '58.   (MIRA 11:4)

1.Chernivets'kiy derzhavniy universitet.
          (Semiconductors) (Excitons)

24(3)   SOV/20-123-5-16/50
AUTHORS: Samoylovich, A. G., Korenblit, L. L.

TITLE: The Faraday Effect on Mott's Excitons   (Effekt Faradeya na
              eksitonakh Motta)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 828-831
              (USSR)

ABSTRACT: This paper deals with the Faraday (Faradey) effect on Mott's
              excitons of not too great radii ($d < 10^{-5}$ cm). The Verde
              constant can be determined on the basis of their connection
              with the vector of gyration, and the problem is therefore
              reduced to the calculation of the complex polarizability of
              the exciton. This exciton is subjected to the influence of
              the constant magnetic field $\vec{H}$, and of a monochromatic electro-
              magnetic wave of the frequency   , and of the vector po-
              tential $\vec{A}(\vec{\xi}) \mathrm{Re} \vec{A}_0 e^{i[\omega t - (\vec{k} \vec{\xi})]}$, $|\vec{k}| = \omega/c$ denotes the wave

              vector. The medium is assumed to be isotropic. After the
              introduction of new denotations, an expression is given for
              the Hamiltonian of the exciton. This Hamiltonian can be
              simplified noticeably in the case of dipole approximation.
Card 1/2   The authors then solve the time-dependent Schroedinger

The Faraday Effect on Mott's Excitons   SOV/20-123-5-16/50

(Shredinger) equation. The state of the exciton (for $\vec{A} = 0$)
can be described by the whole of the integrals of motion. The
authors then discuss step by step the deduction of the tensor
of polarizability. An expression is found also for the vector
of gyration. This vector of gyration is proportional to the
difference Δ of the masses of the electron and of the hole.
According to the results of this paper, a Faraday effect on
excitons is possible only in the case $m_e^* \neq m_h^*$. In this case

the rotations of the polarization plane which are caused by
the electron and by the hole completely compensate one another.

(m_e^* and m_h^* denote the effective mass of the electron and of

the hole, respectively). There are 4 Soviet references.

ASSOCIATION: Institut poluprovodnikov Akademii nauk SSSR (Institute of Semi-
conductors of the Academy of Sciences, USSR)

PRESENTED: August 6, 1958, by A. F. Ioffe, Academician

SUBMITTED: August 1, 1958

Card 2/2

663340

~~24(3)~~ 24.7700

SOV/181-1-10-15/21

AUTHORS: Samoylovich, A. G., Korolyuk, S. L.

TITLE: The Theory of Elementary Excitation in Atomic Semiconductors

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 10,
             pp 1592 - 1599 (USSR)

ABSTRACT: A. F. Ioffe assumed in a paper (Ref 2) that in semiconductors
             excitons participate in the thermal conduction. The excitons
             may now be assumed to play a part in kinetic phenomena also
             as scattering centers of electrons and holes. The authors of
             the present paper investigate the interactions of electrons
             and holes with excitons, of excitons with phonons, etc. This
             is possible in the simplest way by considering electrons, ex-
             citons, and holes as elementary excitations in the crystal,
             which may interact among one another (cf. Refs 1-9). For a
             detailed investigation of kinetic phenomena it is necessary to
             have a Hamiltonian, which describes the behavior of semicon-
             ductors from the point of view of elementary excitations in
             consideration of interactions between them. Such a Hamiltonian

Card 1/3   was deduced in reference 10, but is was found to be incomplete,

663340

The Theory of Elementary Excitation in Atomic   SOV/181-1-10-15/21
Semiconductors

because some important terms describing interaction among ele-
mentary excitations were lacking. It was the task of the pre-
sent paper to set up such a complete Hamiltonian. One of the
most important tasks to be performed was to exclude the "back-
ground", i.e. the regular separation of the ground state (cf.
Refs 5-8). Interactions were taken into account according to a
method by Bonch-Bruyevich (Ref 1), which was somewhat varied for
the case under investigation. The simple model of an atomic
semiconductor is investigated, where every atom has a saturated
valence shell with two electrons. The following elementary
excitations may occur: Electrons, holes, ortho- and paraexci-
tons.   The method of expanding the Hamiltonian is discussed
in detail, and the quadratic terms occurring therein (systems
(6) - (8)) are explicitly written down. Finally, also the Ha-
miltonians of third and fourth order are given, and individual
terms, which describe special forms of interaction, (e.g. elec-
trostatic interaction between the elementary excitations in
the $\mathcal{H}(4)$: formula (26), electrostatic interaction between holes
and electrons :(27), between excitons and holes and electrons:
Card 2/3   (28)) are written down. There are 12 references, 11 of which

The Theory of Elementary Excitation in Atomic
Semiconductors

663340

SOV/181-1-10-15/21

are Soviet.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute for Semi-
conductors, AS USSR, Leningrad). Chernovitskiy gosudarstvennyy
universitet (Chernovtsy State University)

SUBMITTED: February 20, 1959

Card 3/3

24,7900

AUTHORS: Samoylovich, A. G., Nitsovich, M. V.

TITLE: The Problem of Magnetic Susceptibility of Metallic Lithium

TEXT: The present article is a continuation of a previous paper (Ref. 1)[*]
in which general expressions were deduced for the orbital magnetic sus-
ceptibility of an electron gas in a crystal. These expressions are here
employed for calculating the magnetic susceptibility of metallic lithium.
Pines (Ref. 2) has already analyzed the experimental data obtained for
lithium, and he represented them theoretically by the formula
$\chi_o = \chi_s + \chi_d + \chi_a$; here, χ_o denotes the total magnetic susceptibility,
χ_s the paramagnetic spin susceptibility with regard to electronic inter-
action, χ_a the atomic diamagnetic susceptibility, and χ_d the diamagnetic
susceptibility of the conduction electrons. The author now attempts to
give a better description of the experiments, and he demonstrates his
method by the example of lithium. He sets $\chi = \chi_1 + \chi_2 + \chi_3 + \chi_4 + \chi_5$ for

Card 1/2

[*] Fizika metallov i metallovedeniye, 1959, Vol. 7, Nr. 5, pp 641-649 (USSR)

81782

The Problem of Magnetic Susceptibility
of Metallic Lithium

S/181/60/002/02/30/033
B006/B067

its susceptibility (it has a body-centered cubic lattice). χ_i is given by formulas (3) - (7), where the denotation introduced in Ref. 1 is used. These terms are calculated by the approximation method of Bardeen, A. G. Samoylovich, and V. Barkhatov. The results are discussed for each term individually. The following was obtained: The main portion of diamagnetic susceptibility is represented by χ_1; it was found that $\chi_1 = -0.148$; $\chi_2 = -0.025$; $\chi_3 + \chi_4 = -0.121$, which indicates the strong coupling of conduction electrons in lithium; $\chi_d = \chi_1 + \chi_2 + \chi_3 + \chi_4 = -0.294$; $\chi_5 = 0.0171 \frac{\alpha}{|\Delta E|}$, $\alpha = 15.2$ ev, $|\Delta E| = 0.52$ ev. In conclusion, the author thanks L. L. Korenblit for discussions. There are 2 tables and 4 references: 3 Soviet and 1 American.

ASSOCIATION: Institut fiziki poluprovodnikov AN SSSR (Institute of Semiconductor Physics of the AS USSR). Chernovitskiy gosudarstvennyy universitet (Chernovtsy State University)

SUBMITTED: September 12, 1959

Card 2/2

$24,7600$ $(1635, 1043, 1144)$

AUTHORS: Samoylovich, A. G. and Iskra, V. D.

TITLE: Effect of Crystal Anisotropy Upon Thermal Vibrations of
Atoms in Ge and Si

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 11, pp. 2827-2833

TEXT: The present paper describes a theoretical study of the spectrum and
polarization of acoustic phonons in germanium and silicon. It is shown
that the anisotropic crystal of Ge or Si, which is characterized by the
elastic moduli c_{11}, c_{12}, and c_{44} ($c^* = -c_{11} + c_{12} + 2c_{44} \neq 0$), may well be
replaced by an elastic and isotropic crystal whose elastic moduli are de-
scribed by the following equations:

$$c'_{11} = \frac{1}{3}\left\{ 2c_{44} + c_{11} + 2(c_{11} - c_{44})\sqrt{1 + \frac{3 \, c^*(c_{11} + c_{12})}{5(c_{11} - c_{44})^2}} \right\},$$

$$c'_{44} = \frac{1}{3}\left\{ 2c_{44} + c_{11} - (c_{11} - c_{44})\sqrt{1 + \frac{3 \, c^*(c_{11} + c_{12})}{5(c_{11} - c_{44})^2}} \right\}, \quad c^{*'} = 0.$$

Card 1/3

86437

Effect of Crystal Anisotropy Upon Thermal   S/181/60/002/011/024/042
Vibrations of Atoms in Ge and Si   B006/B056

The constants have the following numerical values:

	c_{12}	c_{44}	c_{11}	c^{*}	c'_{11}	c'_{44}
Ge $\left[10^{12} \text{dyn/cm}^2\right]$	0.53	0.68	1.356	0.534	1.592	0.562
Si $\left[10^{12} \text{dyn/cm}^2\right]$	0.65	0.801	1.675	0.577	1.927	0.675

The spectrum of accustic phonons is given as

$$\omega_1 = \sqrt{\frac{c_{44}}{\varrho} \left(k^2 + \frac{b}{3} + \frac{2b}{3}\sqrt{1 - 3\frac{c}{b^2}}\right)} \; ; \quad \omega_{2,3} = \sqrt{\frac{c_{44}}{\varrho}\left(k^2 + \frac{b}{3} - \frac{b}{3}\sqrt{1 - 3\frac{c}{b^2}}\right)} \; .$$

For Ge, $b = \dfrac{c_{11} - c_{44}}{c_{44}} k^2 = 0.994 k^2$ and $c = -\dfrac{c^{*}(c_{11} + c_{12})}{c_{44}^3}\xi = -2.178\,\xi$;

for Si, $b = 1.091 k^2$ and $c = -2.091\,\xi$. As ω_1 and ω_2 depend only little on the direction of the wave vector $\vec{k}$, it is possible to average over the directions of $\vec{k}$ by putting $\xi = 1/5$. It can be shown that the polarizations of oscillations differ only little from those observed in an isotropic crystal. There are 4 figures, 2 tables, and 6 references: 2 Soviet and

Card 2/3

86437

Effect of Crystal Anisotropy Upon Thermal   S/181/60/002/011/024/042
Vibrations of Atoms in Ge and Si   B006/B056

4 US.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad
                (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: July 10, 1960

Card 3/3